Government of Nepal

District Transport Master Plan (DTMP)

Ministry of Federal Affairs and Local Development

Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR)

District Development Committee, Jumla

Volume I: Main Report

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Prepared by Rural Infrastructure Developers Consultant P. Ltd (RIDC) for the District Development Committee (DDC) and District Technical Office (DTO) Jumla with Technical Assistance from the Department of Local Infrastructure and Agricultural Roads (DOLIDAR), Ministry of Federal Affairs and Local Development and grant

FOREWORD

It is my great pleasure to introduce this revised District Transport Master Plan (DTMP) of Jumla district which was concurred and selected by the district stakeholder's meeting held on 11th February, 2013 and District Core Road Network selected by DDC stakeholders on 5th March. This revised plan was forwarded to Department of Local Infrastructure Development and Agriculture Road (DOLIDAR) on 7th March. Based on DTMP guideline 2012, the aim of District Core Road Network (DRCN) is to connect all Village Development Committee (VDC) headquarters with the district headquarters, and strategic road network, either directly or through highway.

It is believed that the document will be helpful to materialize Rural Transport Sector Wide Approach (RTI SWAp) through sustainable planning, resource mobilization, implementation and monitoring of the road development. The document is anticipated to lineout creating substantial employment opportunities for rural people and environment conservation, improvement and new construction activities of the existing road network. DRCN plays a vital role to strengthen and promote overall economic growth of the district through established and improved year round transport services reinforcing transportation linkages. It is most decisive to expand DRCN in a planned way as per the DTMP recommendation by considering the framework of available resource of District Development Committee (DDC). This document is very essential in communicating the donor agencies through central government. Furthermore, this document will be supportive in avoiding existing duplication in resource allocation in road network development by considering basket fund approach.

I would like to express my gratitude to RTI Sector Maintenance Pilot for financial and technical support. I also express my sincere thanks to Jaya Prakash Gupta, Rajendra Prasad Poudel and Sanjay Kumar Chaudhari (DDC & DTO staffs) for their efforts to organize and make successful the workshop as well as collecting data process. I would like to express my heartfelt gratitude to Ministry of Federal Affairs and Local Development (MOFALD) and Department of Local Infrastructure Development and Agriculture Road (DOLIDAR) for providing valuable suggestions and cooperation to produce this report. I also request all concerned stakeholders to implement the guidelines envisaged in this report.

Arjun Kumar Thapa
Local Development Officer

Acknowledgement

We would like to express gratitude to RTI SECTOR Maintenance Pilot for entrusting us on preparation of District Transport Master Plan of Jumla District.

We would also like to express our sincere thanks to Mr. Arjun Kumar Thapa, LDO and Mr. Jaya Prakash Gupta, DTO of Jumla District for their cooperation and coordination during DTMP preparation. We would also like to thanks all the VDC secretaries and officials for their support.

We thank the team who has worked very hard to bring this report at this stage and successful completion of the assignment.

We are grateful to the local people, political parties and leaders, members of government organizations and non government organizations of Jumla District who have rendered their valuable suggestation and support for the successful completion of the job.

Rural Infrastructure Developers Consultants P. Ltd. (RIDC),

Baneshwor, Kathmandu.

May 2013, Kathmandu

Executive summary

Jumla District is located in Karnali Zone of the Mid-western Development Region of Nepal. It borders with Jajarkot district to the South, Kalikot district to the West, Mugu district to the North and Dolpa district to the East. The district is divided into one electoral constituency level, nine Ilakas, and thirty Village Development Committees. The district Headquarter is recently linked with road network and passenger bus service is available during fair weather. Air service is still main transportation mean for this district with regular flights to Nepalgunj available at all seasons. The total area of the district is 2531 km^2. Geographically the district is divided into three distinct regions from north to south, viz higher Himalayan region, Higher Mountain and Mid Mountains. The Higher Himalyan Region comprises of Patarasi and Kanjirowa Himalayan range. The elevation of the district is range from 915 m to 4679m from the mean sea level. The major rivers in the district are Hima, Tila and Jawa.

The main economic activity of the Jumla is agriculture and livelihood, where more than 85% of the district population depends on the agriculture. Paddy, Maize, Millet, Wheat and Barley are the usual cereal crops; apple, potato, bean, oil seed and herbal products are the cash crops.

The district inventory identified just over 337.28 km of roads, including 83km of strategic roads and 254.28km of rural roads. In coordination with the DTICC and DDC, 12 rural roads with a length of 186.98 km were identified as making up the district road core network (DRCN), and the remaining 67.3km were classified as village roads. The existing DRCN roads link up 26 of the 30 VDC headquarters. Out of these 12 roads under DRCN, 8 roads are earthen fair-weather, 4 roads are under track opening phase. The DRCN length is increased by 70.6km by extending 4 existing roads and adding one new road to cover all VDCs of the district in DRCN, thereby making 12 roads in DRCN with total length of 186.98km.

Out of these 12 roads in DRCN, 2 roads are planned to conserve, improve and construct by DoR, and 1 road by DRILP, within this DTMP period.

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	83.00	-	-	83.00
Urban roads	-	-	-	-
District road core network	116.38	-	-	116.38
Village roads	67.30	-	-	67.30
Total	**266.68**	**-**	**-**	**266.68**

Annual conservation cost of 9 roads with 73.81km length is estimated to NPR 29.6 million based on the first year, and will be updated in the ARMP based on actual annual maintenance needs as determined in the annual road condition survey. For the full five-year period the conservation costs will come to NPR 187.5 million. An analysis of the road network identified the need for improvement of all the DRCN roads in order to bring them to a maintainable all-weather standard and provide them with a proper road surface in light of existing traffic volumes. The required improvements and their estimated costs are listed below.

Improvement type	Requirement		Cost (NPR)
Bridges	155	m	136,500,000
Slab culverts	306.5	m	91,950,000
Causeways	429	m	75,255,000
Hume pipes	9	units	270,000
Masonry retaining walls	960.5	m^3	14,407,500
Gabion retaining walls	70505	m^3	423,030,000
Lined drains	25825	m	180,775,000

Widening	0	m	-
Rehabilitation	0	km	-
Gravelling	116.38	km	349,140,000
Blacktopping	0	km	-
New construction	70.60	km	520,450,000
Total			**1,791,777,500**

The available budget for the road sector for the coming five years (fiscal year 2070/71 to 2074/75) is estimated to be NPR 728.5 million. Allocation to the district road core network was set at 80% of the total road sector budget, which was subsequently allocated firstly to the annual maintenance needs, secondly to the improvement needs and lastly to new construction. This budget is insufficient to cover all the estimated costs of conservation, improvement and new construction. However, it allows all conservation requirements to be covered throughout the DTMP period and improvement works of nearly 9 roads to be completed within the DTMP period including 3 roads undertaking by DoR & DRILP. The remaining improvement works and new construction works will be carried out in the next DTMP.

Within the DTMP period 73.81km of roads will be gravelled (41.6%), resulting in being brought to a maintainable all-weather standard. VDC headquarters with access to all-weather DRCN roads or the SRN will increase from 1 to 14, while the percentage of the district population with such access will increase from 4% to 42%.

Abbreviations

DDC	District Development Committee
DOLIDAR	Department of Local Infrastructure Development and Agriculture Road
DOR	Department of Road
DTICC	District Transport Infrastructure Coordination Committee
DTMP	District Transport Master Plan
DTPP	District Transport Perspective Plan
GIS	Geographical Information system
GPS	Global Positioning System
GON	Government of Nepal
LGCDP	Local Governance and Community Development Programme
MLD	Ministry of Local Development
RAP	Rural Access Programme
SWAp	Sector Wide Approach
VDC	Village Development Committee

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1. Introduction

Jumla district is situated in the Karnali zone of the Mid Western Development Region. The total area of the district is 2531 sq.km. The district is surrounded by Dolpa in the east, Kalikot district in the west, Mugu district in the north and Jajarkot district in the south. The district is situated in Longitude between 81^0 28' E to 82^0 18'East and Latitude between 28^0 58'N to 29^0 30'North.Geographically the district is divided into three distinct regions from north to south, viz higher Himalayan region, Higher Mountain and Mid Mountains. The Higher Himalyan Region comprises of Patarasi and Kanjirowa Himalayan range. The elevation of the district is range from 915 m to 4679m from mean sea level. The average temperature varies from 18^0c to 30^0c in summer and -14^0 c to 8^0c in winter and the annual average rainfall is 1343.0mm.The major rivers in the district are Hima, Tila and Jawa.

The main economic activity of the Jumla is agriculture and livelihood where more than 85% of the district population depends on the agriculture. Paddy, Maize, Millet, Wheat and Barley are the usual cereal crops and apple, potato, bean, oil seed and herbal products are the cash crops.

The living standard of rural people could not be improved despite of the top priority given to the agriculture sector due to the lack of rural infrastructures such as roads, market centers, electrification and communication etc.

The district is divided into one electoral constituency level, nine Ilakas, and thirty Village Development Committees. The district Headquarter is recently linked with road network and passenger bus service is available during fair weather. Air service is the main transportation mean of this district with regular flights to Nepalgunj available at all seasons.

The DDC body of Jumla has given its highest priority on rural roads and this is regard 142.5 km earthen road is constructed, out of which the vehicles are plying over 87km during fair weather. All rural roads are earthen type and concern is focused to upgrade the rural roads from fair weather to all weather standards.

Land Use pattern of the district:
The total area of the district is 254365 hectare. The 39486 hectare land is useful for agriculture but only 26701 hectare is being cultivated. The irrigated land is 3501 hectare, out of total cultivated land of 26701 hectare.

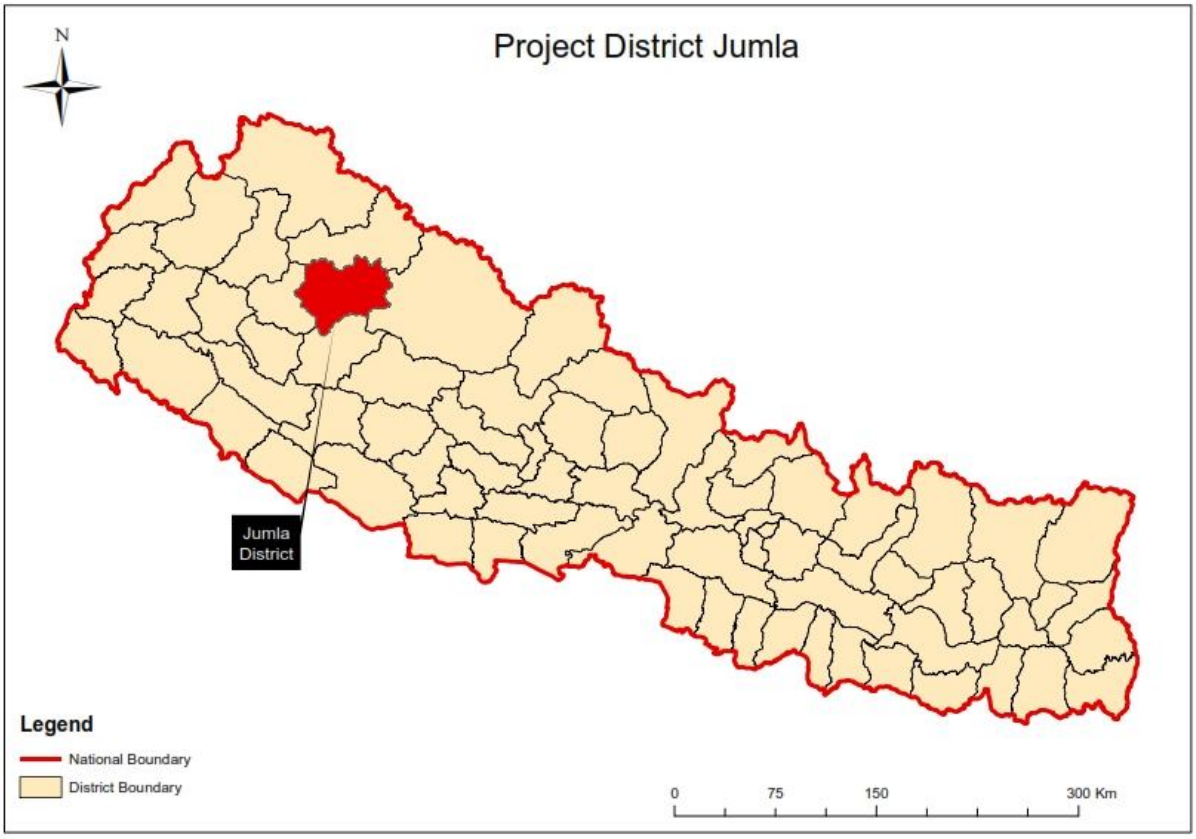
Rivers and Lakes in the district:
Tila, Hima and Java are tha major rivers of district and majority of productive land is situated along the banks of the rivers. There is emmence possibility to use this river water for irrigation, install improved ghatta, hydropower and drinking purpose. The lakes like Bishnu Tal, Shankha Daha, Thakurjyu Daha, Hudke daha and Jogini Tal etc.are potential destination of domestic and international tourism.

Natural Plants:
The land above 12000 feet is not suitable for tree species so bushes, shrubs and flowering herbs are the major plants. These area is rich for high value Non Timber Forest Products ie. Yarshagumba, Padamchal, Jatamansi, Kutki, panchaule etc. Similarly, the lower part of the district is occupied by broadleaf and coniferous forest with dominant of Pinus, Dhupi, Gurans, Bhojpatra, Khasru,etc. The wild animals like, Kasturi, Jharal, Ghoral, Leopard, Bandel, snow Leopard and wolf etc can be found in the forests of district.

Religious and Tourism area:
The temples of Chandan Nath and Bhairabnath are situated in Khalanga, Kanakasundari temple, Kartikswami thakurjyu, Pandavgupha, Dansaghu dovan,Malikasthan and Ganehsthan are the major

religious places of Hindus in Jumla district. Similarly Chotra Gumba, Manidillikot Gumba at Guthichour VDC. Manandhar gumba at Dillichour are other religious places.

Figure 1 Map of Nepal indicating Jumla District



According to the National Census 2011, the total population of the district is 107695 comprising 54,099 (50.5%) female and 53,596 (49.5%) male with in 19,303 households. This district has an average population density of around 43people per square km. The average family size is 5.9 and Life expectancy of 54 years. The average literacy rate is about 51%. It has multi ethnic composition with Chhetri, Thakuri, Brahman, Damai, Kami and Bhote. The common language of the district is Khas (Nepali).

Although accessibility to Jumla is limited, it is improving rapidly. The main access road of district is Karnali Highway (Surkhet-Jumla) which is currently being upgraded to all weather standards by DOR. A 232 km feeder road between the district headquarters and Surkhet is also being upgraded by DOR to all weather standards.

2. District Road Core Network (DRCN)

This chapter gives an overview of the existing roads in Jumla district, distinguishing between strategic roads and rural roads. It goes on to identify those rural roads that make up the district road core network (DRCN) that will form the basis for this DTMP. The remaining rural roads are classified as village roads.

2.1 Total Road Network

Jumla district has an estimated road network of 337.28 kilometres, including 83 km of strategic roads managed by DOR and 281 km of rural roads managed by Jumla DDC and the VDCs. Most of the strategic roads and all of the rural roads have an earthen surface. A map of the total road network in Jumla district is shown in Figure at the end of this chapter.

Table 2.1.1 Road length in Jumla district (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic roads	83.00	-	-	83.00
Urban roads	-	-	-	-
Rural roads	-			
Total	**83.00**	**-**	**-**	**83.00**

2.2 National Highways and Feeder Roads

Jumla district has one highway and one feeder road totalling to 83 km length. The Karnali Highway is being blacktopped by DOR, while the Nagmagad Mugu road has recently track opened by DOR.

Table 2.2.1 National highways and feeder roads in Jumla district (km)

Code	Name of Road	Total length	Black Top	Gravel	Earthen
H	Surkhet – Jumla Road (Nagmaghat - Khalanga Sector)	**32.00**			32.00
F	Nagmaghat - Mugu Road (Nagmaghat - Malika bota (Daaba) Sector)	**51.00**			51.00
Total		**83.00**	**0.00**	**0.00**	**83.00**

2.3 District Road Core Network

As part of the preparation of this DTMP, the District Road Core Network (DRCN) was identified together with the DTICC and DDC. This DRCN is the minimum network that allows all VDC headquarters to be connected with the strategic road network and the district headquarters, either directly or through other VDCs. In the selection of the DRCN roads, account was taken of the road conditions and the existing traffic levels. The identified DRCN roads were subsequently provided with road codes according to national standards.

The resulting District Road Core Network of this district is shown in Figure at the end of this chapter. The DRCN consists of 12 district roads with a total length of 116.38 km. The remaining 83 km of existing rural roads are not considered to be DRCN roads and are classified as village roads under the responsibility of the VDCs (see also section 2.3). A complete list of the DRCN roads and their characteristics is provided in Table 2.3..

Table 2.3.1 Road length in Jumla District (km)

Road Class	Total length	Black Top	Gravel	Earthen
Strategic road network	**83.00**	**-**	**-**	**83.00**
Highways	32.00			32.00
Feeder roads	51.00			51.00
Urban roads	-	-	-	-
District road core network	**116.38**	-	-	116.38
Village roads	**67.30**	-		67.30
Total	**266.68**	**-**	**-**	**266.68**

Table 2.3.2 District road core network in Jumla district (km)

Code	Name of Road	Total length	Black Top	Gravel	Earthen	All weather	Fair weather	New Construction
63DR010	Jumla-Urthu-Dillichaur	**16.02**			16.02	-	16.02	
63DR011	Dillichaur-Chhumchaur	**4.60**			4.60	-	4.60	
63DR012	Dillichaur-Talfi-Pere-Syalagad	**6.10**			6.10	-	6.10	
63DR009	Chandannath-Garjyangkot-Guthichaur-Chotra	**21.71**			21.71	-	21.71	
63DR004	Acharyalihi-Dhitallihi-Sanigaun	**6.26**			6.26	-	6.26	
63DR006	Dansangu-Khalla-Haku-Ghodesing	**11.04**			11.04	-	11.04	
63DR001	Bagbazar-Patharkhola	**2.64**			2.64	-	2.64	
63DR003	Acharyalihi-Narakot	**3.00**			3.00	-	3.00	
63DR007	Gachchusangu-Dhimichaur-Lekpor-Kotghar	**10.00**			10.00	-	10.00	
63DR005	Kudari-Tamti-Topla	**12.20**			12.20		12.20	
63DR008	Jumla-Urthu-Bumramadi-Bulbule	**22.81**			22.81	-	22.81	
Total		**116.38**	**-**	**-**	**116.38**	**-**	**116.38**	

2.4 Village Roads

The 67.3km of remaining roads that do not form part of the identified district road core network (DRCN) are classified as village roads and are under the responsibility of concerned VDCs of the district. These are roads of a lower importance that do not form the main link between the VDC headquarters and the district headquarters or strategic road network. Instead they provide additional access to other parts of the VDCs.

On an average each VDC will thus be responsible for 2.24 km of village roads. It is recommended that the VDCs shall organise maintenance workers to carry out the emergency and routine/recurrent maintenance of these roads to ensure their accessibility. Any upgrading or new construction of village roads falls outside the scope of this DTMP and is the responsibility of the VDCs.

Funding for these roads will mainly come from the VDC grants. Some district funding will also be allocated to the village roads (see also chapter 6). However, this district funding will be mainly for maintenance, especially emergency maintenance and routine/recurrent maintenance to keep these roads passable.

Figure 2 Total Road Inventory Map of Jumla District

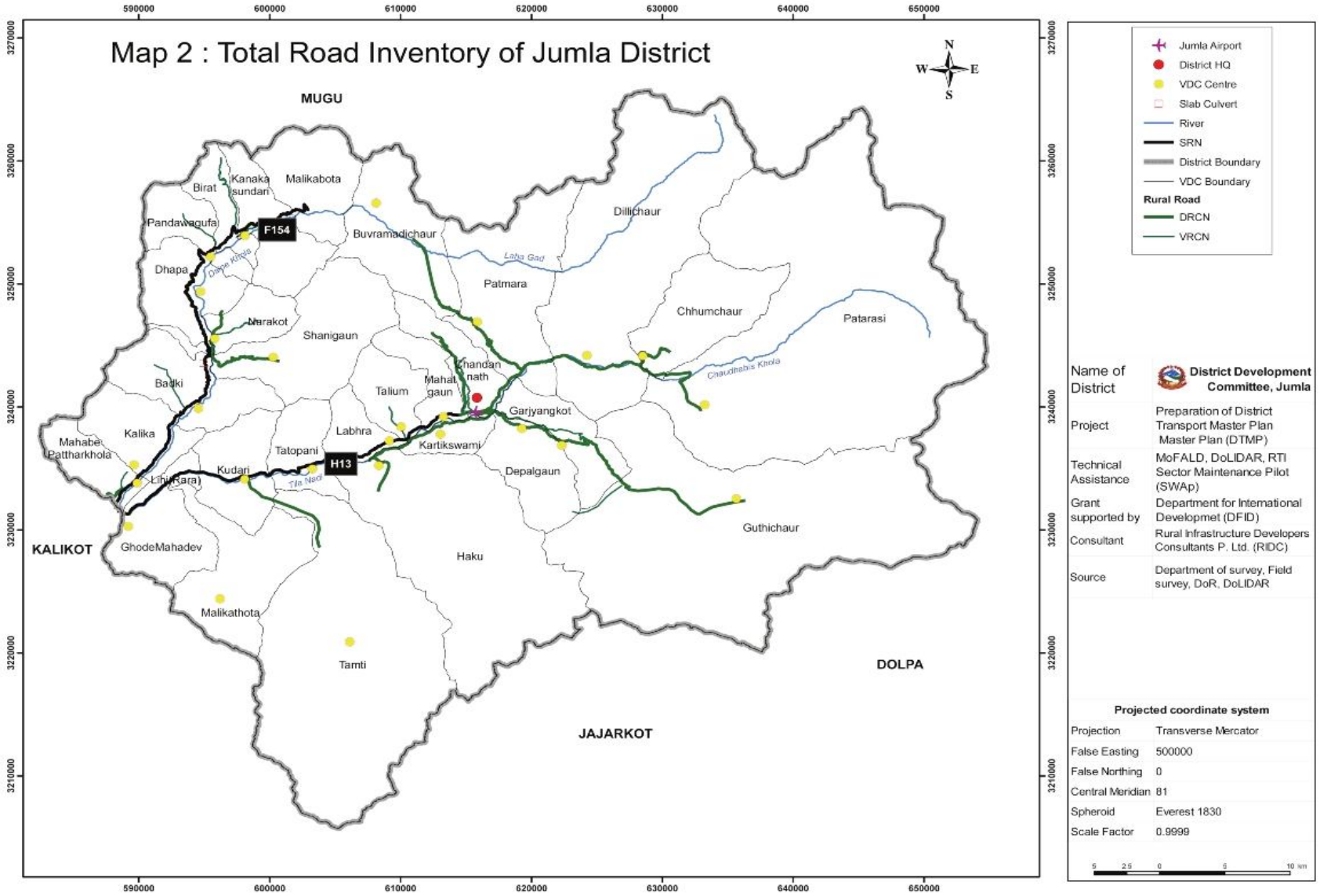
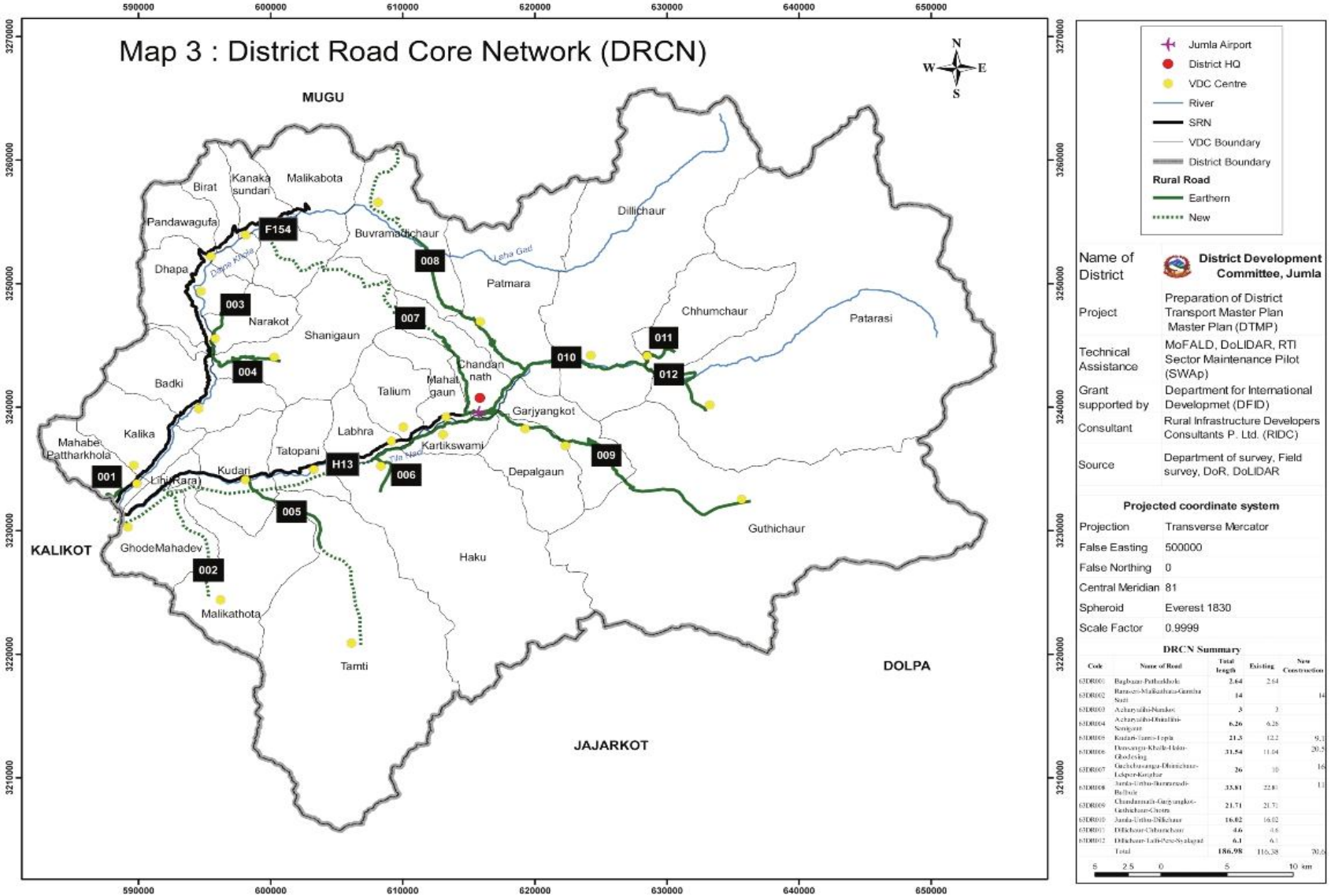


Figure 3 District Road Core Network (DRCN) Map



3. District Transport Perspective Plan (DTPP)

This chapter looks at the required interventions regarding conservation, improvement and new construction of the district road core network. It provides a complete list of all works required in the DRCN, which together form the District Transport Perspective Plan (DTPP). For the works forming part of the DTPP, chapter 4 will subsequently provide cost estimation, while chapter 5 will rank the works according to priority and chapter 6 will select those priority works that can be carried out in the next 5 years and thus form part of the District Transport Master Plan (DTMP).

3.1 Conservation

Conservation refers to the actions required to repair a road and keep it in good and passable condition. For DTMP planning purposes standard costs per kilometre for each maintenance type are applied to the entire district road core network, whereby for certain maintenance type's distinction is made according to the surface type of the road. Identification of the actual maintenance requirements of each road is made annually in the ARMP. Conservation activities include:

1. Emergency maintenance - Basic repairs aimed at removing landslides and repairing damage to the road that inhibit the proper use of the road and make it impassable. This mainly takes place during and after the rainy season. A provisional lumpsum is reserved for the entire district road core network based on the network length. Allocation to specific road sections is based on the actual need for clearing landslides or repairing washouts and cuts in the road.
2. Routine maintenance - General maintenance of the road aimed at preventing damage by ensuring the proper working of the different road elements (retaining walls, drainage system, carriageway, etc.) and cutting vegetation. This is carried out each year on a more or less continuous basis. Routine maintenance is required for the entire district road core network. The specific requirements for routine maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.
3. Recurrent maintenance - Repairs of minor damage to the road surface and road structures to bring them back to good condition. This is generally carried out once or twice a year. Recurrent maintenance is required for the entire district road core network, whereby distinction is made according to the surface type. The specific requirements for recurrent maintenance are determined on an annual basis through the road condition survey and defined in the ARMP.
4. Periodic maintenance - Larger repairs to the road largely aimed at renewing the road surface through regravelling, resealing or overlays. It is generally carried out with several years interval. Although periodic maintenance is only required for specific sections of the district road core network, a lump sum allocation is made for the entire district road core network based on average annual requirements, distinguishing between different surface types. The specific periodic maintenance requirements are determined on an annual basis through the annual road condition survey and defined in the ARMP.

The length of roads to be included under each conservation type for the first year is indicated below. This is basically the entire district road core network in as far as it does not require rehabilitation.

Table 3.1.1 Conservation requirements

Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)
63DR010	16.02	16.02	16.02	16.02
63DR011	4.60	4.60	4.60	4.60
63DR012	6.10	6.10	6.10	6.10
63DR004	6.26	6.26	6.26	6.26
63DR001	2.64	2.64	2.64	2.64
63DR003	3.00	3.00	3.00	3.00
63DR007	10.00	10.00	10.00	10.00
63DR008	22.81	22.81	22.81	22.81
Total	**71.43**	**71.43**	**71.43**	**71.43**

3.2 Improvement

Improvement refers to actions required to improve a road to bring it to a maintainable all-weather standard. It includes the following actions, which for Jumla are described in more detail in the subsequent sections.

1. Rehabilitation - Significant repairs required to bring a very poor road back to a maintainable standard. This does not include any changes to the original surface type.
2. Gravelling - Placement of a gravel layer to make it all-weather and ensure that the road remains passable during the rainy season.
3. Cross drainage - Placement of suitable cross-drainage structures with the aim of making the road all-weather and ensuring that the road remains passable even during the rainy season
4. Protective structures - Placement of retaining walls and lined side drains to avoid excessive damage to the road during the rainy season and bring it to a maintainable standard.
5. Blacktopping - Placement of a blacktop layer in roads with traffic volumes exceeding 50 passenger car units (PCU) to reduce damage to the road surface
6. Widening - Increase of the road width in roads with traffic volumes exceeding 500 passenger car units (PCU) to ensure the proper flow of traffic.

3.2.1 Rehabilitation

No rehabilitation needs were identified in the district road core network.

3.2.2 Gravelling

As the entire district road core network needs to be brought to an all-weather status, gravelling of the road surface is required for all the earthen sections in the DRCN. This district concerns the total of 116.38 km of DRCN roads.

Table 3.2.2 Sections of the district road core network requiring gravelling

Code	Name of Road	Total length (km)	Gravelling (km)
63DR010	Jumla-Urthu-Dillichaur	16.02	16.02
63DR011	Dillichaur-Chhumchaur	4.60	4.60
63DR012	Dillichaur-Talfi-Pere-Syalagad	6.10	6.10
63DR009	Chandannath-Garjyangkot-Guthichaur-Chotra	21.71	21.71
63DR004	Acharyalihi-Dhitallihi-Sanigaun	6.26	6.26
63DR006	Dansangu-Khalla-Haku-Ghodesing	11.04	11.04
63DR001	Bagbazar-Patharkhola	2.64	2.64
63DR003	Acharyalihi-Narakot	3.00	3.00
63DR007	Gachchusangu-Dhimichaur-Lekpor-Kotghar	10.00	10.00
63DR005	Kudari-Tamti-Topla	12.20	12.20
63DR008	Jumla-Urthu-Bumramadi-Bulbule	22.81	22.81
Total			**116.38**

3.2.3 Cross Drainage

The need for cross drainage was identified for the different DRCN roads. A total of 5 bridges with a total length of 130m, 22 slab culverts with total length of 307m, 47 cement concrete causeways with total length of 372m, 5 stone causeways with a total length of 57m, and 9 pipe culverts were identified as being required.

Table 3.2.3 Required cross drainage structures

Code	Name of Road	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)
63DR010	Jumla-Urthu-Dillichaur	55		120		
63DR011	Dillichaur-Chhumchaur		15	20	15	
63DR012	Dillichaur-Talfi-Pere-Syalagad	20	23			
63DR009	Chandannath-Garjyangkot-Guthichaur-Chotra	30	60	78		6
63DR004	Acharyalihi-Dhitallihi-Sanigaun	25		24		
63DR006	Dansangu-Khalla-Haku-Ghodesing		40.5	44		
63DR001	Bagbazar-Patharkhola					1
63DR003	Acharyalihi-Narakot					1
63DR007	Gachchusangu-Dhimichaur-Lekpor-Kotghar			36		1
63DR005	Kudari-Tamti-Topla					
63DR008	Jumla-Urthu-Bumramadi-Bulbule		168	50	42	
Total		**130**	**307**	**372**	**57**	**9**

3.2.4 Protective Structures

Based on the road survey carried out in Jumla, the following retaining walls were identified as being required to ensure the protection of the district road core network.

Table 3.2.4 Required protective structures

Code	Name of Road	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)
63DR010	Jumla-Urthu-Dillichaur	255	15,123	4,380
63DR011	Dillichaur-Chhumchaur		5,500	1,000
63DR012	Dillichaur-Talfi-Pere-Syalagad		1,750	2,000
63DR009	Chandannath-Garjyangkot-Guthichaur-Chotra	212.5	11,200	4,945
63DR004	Acharyalihi-Dhitallihi-Sanigaun		12,600.0	1,500
63DR006	Dansangu-Khalla-Haku-Ghodesing	85	5,200	3,500
63DR001	Bagbazar-Patharkhola		8,137.5	500
63DR003	Acharyalihi-Narakot	153	270	
63DR007	Gachchusangu-Dhimichaur-Lekpor-Kotghar		675	1,000
63DR005	Kudari-Tamti-Topla			
63DR008	Jumla-Urthu-Bumramadi-Bulbule	255	10,050	7,000
Total		**961**	**70,505**	**25,825**

3.2.5 Widening

Widening of the district road core network in Jumla is required only in specific locations to bring it up to the minimum standard and to ensure sufficient space in the curves. Additional widening to a higher standard is not required because traffic volumes remain very low.

3.2.6 Black Topping

An analysis of the traffic data for the different roads making up the district road core network shows that no road network require blacktopping.

3.3 New Construction

New construction of DRCN roads is required to connect the remaining VDC headquarters. A list of proposed roads for new construction is provided below. These roads provide access to 4 VDC HQs that do not currently have road access.

Table 3.3.1 Sections of the district road core network requiring new construction

Code	Name of Road	New length	Bridge (m)
63DR010	Jumla-Urthu-Dillichaur		
63DR011	Dillichaur-Chhumchaur		
63DR012	Dillichaur-Talfi-Pere-Syalagad		
63DR009	Chandannath-Garjyangkot-Guthichaur-Chotra		
63DR004	Acharyalihi-Dhitallihi-Sanigaun		
63DR006	Dansangu-Khalla-Haku-Ghodesing	20.50	
63DR001	Bagbazar-Patharkhola		
63DR003	Acharyalihi-Narakot		
63DR007	Gachchusangu-Dhimichaur-Lekpor-Kotghar	16.00	
63DR005	Kudari-Tamti-Topla	9.10	
63DR008	Jumla-Urthu-Bumramadi-Bulbule	11.00	
63DR002	Raraseri-Malikathata-Gamtha-Sudi	14.00	25
Total		**70.60**	**25**

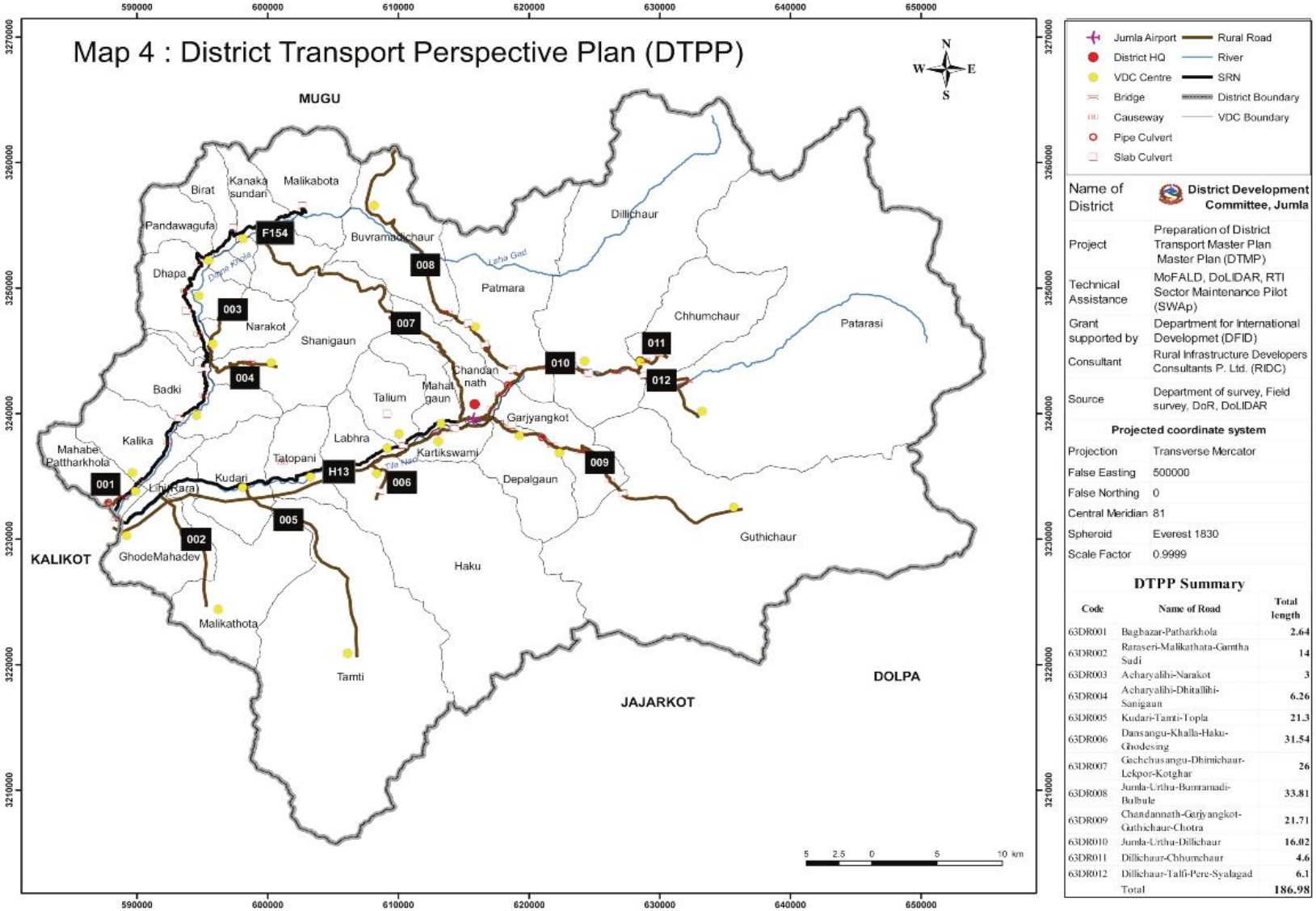
3.4 District Transport Perspective Plan

The DTPP foresees bringing the entire existing district road core network to maintainable all-weather status, and expanding it to provide access to an additional 4 VDC headquarters. For this purpose, all 116.38 km will be gravelled and a number of different cross drainage and protective structures will be constructed. A further 70.6 km of new road will be constructed to maintainable all-weather gravel standard providing access to 4 additional VDC HQs. The district road core network will subsequently consist of 71.43 km of maintainable all-weather roads. The following table lists the required interventions, while the proposed network is shown in the DTPP map.

Table 3.4.1 District Transport Perspective Plan

Code	Emergency maintenance (km)	Routine maintenance (km)	Recurrent maintenance (km)	Periodic maintenance (km)	Rehabilitation (km)	Gravelling (km)	Blacktopping (km)	Widening (m)	Bridge (m)	Slab culvert (m)	CC Causeway (m)	Stone Causeway (m)	Pipe culvert (units)	Masonry walls (m3)	Gabion walls (m3)	Lined drain (m)	New construction (km)
63DR010	16.02	16.02	16.02	16.02	-	16.02	-	-	55.00	-	120.00	-	-	255.00	15,122.50	4,380.00	-
63DR011	4.60	4.60	4.60	4.60	-	4.60	-	-	-	15.00	20.00	15.00	-	-	5,500.00	1,000.00	-
63DR012	6.10	6.10	6.10	6.10	-	6.10	-	-	20.00	23.00	-	-	-	-	1,750.00	2,000.00	-
63DR009	21.71	21.71	21.71	21.71	-	21.71	-	-	30.00	60.00	78.00	-	6.00	212.50	11,200.00	4,945.00	-
63DR004	6.26	6.26	6.26	6.26	-	6.26	-	-	25.00	-	24.00	-	-	-	12,600.00	1,500.00	-
63DR006	11.04	11.04	11.04	11.04	-	11.04	-	-	-	40.50	44.00	-	-	85.00	5,200.00	3,500.00	20.50
63DR001	2.64	2.64	2.64	2.64	-	2.64	-	-	-	-	-	-	1.00	-	8,137.50	500.00	-
63DR003	3.00	3.00	3.00	3.00	-	3.00	-	-	-	-	-	-	1.00	153.00	270.00	-	-
63DR007	10.00	10.00	10.00	10.00	-	10.00	-	-	-	-	36.00	-	1.00	-	675.00	1,000.00	16.00
63DR005	12.20	12.20	12.20	12.20	-	12.20	-	-	-	-	-	-	-	-	-	-	9.10
63DR008	22.81	22.81	22.81	22.81	-	22.81	-	-	-	168.00	50.00	42.00	-	255.00	10,050.00	7,000.00	11.00
63DR002	-	-	-	-	-	-	-	-	25.00	-	-	-	-	-	-	-	14.00
Total	**71.43**	**71.43**	**71.43**	**71.43**	**-**	**116.38**	**-**	**-**	**155**	**307**	**372**	**57**	**9**	**961**	**70,505**	**25,825**	**70.60**

Figure 4 District Transport Perspective Plan (DTPP)



4. Cost Estimation

For the cost estimation, use has been made of standard costs for the different activities required. For the conservation activities this results in an estimation of annual costs, while for improvement and new construction activities this result in an estimation of the total costs required.

4.1 Conservation

The costs of the required conservation measures have been calculated using the following standard costs. These standard costs have been applied to the entire district road core network, whereby distinction is made based on the surface type in the case of recurrent and periodic maintenance. It must be noted here that the standard costs for periodic maintenance are the average annual costs, but that the cost for applying periodic maintenance in a specific section every several years will be higher (the cumulative cost of several years). The estimated costs for the first year are presented below, while the costs for subsequent years will vary slightly as road surface types change as a result of improvements. Detailed cost estimations for the actual maintenance needs in any given year will be presented in the ARMP.

Table 4.1.1 Standard unit costs for conservation

Activity	Unit	Unit cost (NPR)
Emergency maintenance	km	40,000
Routine maintenance	km	25,000
Recurrent maintenance (blacktop)	km	550,000
Recurrent maintenance (gravel)	km	500,000
Recurrent maintenance (earthen)	km	350,000
Periodic maintenance (blacktop)	km	250,000
Periodic maintenance (gravel)	km	350,000

For the first year the estimated costs for conservation of the DRCN come to NPR 29.6 million. Based on this cost for the first year, the costs for conservation of the DRCN for the next 5 years are estimated at NPR 187.5 million. These costs will change slightly as the roads are improved and the standard conservation costs change. This will be updated in the ARMP on an annual basis.

Table 4.1.2 Estimated conservation costs for the first year (NPR '000)

Code	Total length (km)	Blacktop (km)	Gravel (km)	Earthen (km)	Emergency maintenance	Routine maintenance	Recurrent maintenance (blacktop)	Recurrent maintenance (gravel)	Recurrent maintenance (earthen)	Periodic maintenance (blacktop)	Periodic maintenance (gravel)	Total first year cost	Total 5-year cost
63DR010	16.02	-	-	16.02	641	401	-	-	5,607	-	-	**6,648**	**33,242**
63DR011	4.60	-	-	4.60	184	115	-	-	1,610	-	-	**1,909**	**9,545**
63DR012	6.10	-	-	6.10	244	153	-	-	2,135	-	-	**2,532**	**12,658**
63DR009	21.71	-	-				-	-		-	-	**-**	**-**
63DR004	6.26	-	-	6.26	250	157	-	-	2,191	-	-	**2,598**	**12,990**
63DR006	11.04	-	-				-	-		-	-	**-**	**-**
63DR001	2.64	-	-	2.64	106	66	-	-	924	-	-	**1,096**	**5,478**
63DR003	3.00	-	-	3.00	120	75	-	-	1,050	-	-	**1,245**	**6,225**
63DR007	10.00	-	-	10.00	400	250	-	-	3,500	-	-	**4,150**	**20,750**
63DR005	12.20	-	-				-	-		-	-	**-**	**-**
63DR008	22.81	-	-	22.81	912	570	-	-	7,984	-	-	**9,466**	**47,331**
Total	**116.38**	**-**	**-**	**71.43**	**2,857**	**1,786**	**-**	**-**	**25,001**	**-**	**-**	**29,643**	**148,217**

4.2 Improvement

The costs of the required improvement measures have been calculated using the following standard costs. These standard costs have been applied to the identified improvement requirements presented in the previous chapter.

Table 4.2.1 Standard unit costs for improvement activities

Activity	Unit	Unit cost (NPR)
Rehabilitation	km	900,000
Widening	m	30,000
Gravelling	km	3,000,000
Blacktopping	km	9,000,000
Bridge construction	m	1,050,000
Slab culvert construction	m	300,000
CC Causeway construction	m	200,000
Stone Causeway construction	m	15,000
Pipe culvert placement	unit	30,000
Masonry wall construction	m^3	15,000
Gabion wall construction	m^3	6,000

The resulting estimated costs come to NPR 1,271 million as indicated in the table below.

Table 4.2.2 Cost estimate for improvement measures (NPR '000)

Code	Total length (km)	Rehabilitation	Widening	Gravelling	Blacktopping	Bridges	Slab culverts	CC causeways	Stone causeways	Pipe culvert	Masonry walls	Gabion walls	Lined drains	Total cost
63DR010	16.02	-	-	48,060	-	57,750	-	24,000	-	-	3,825	90,735	30,660	**255,030**
63DR011	4.60	-	-	13,800	-	-	4,500	4,000	225	-	-	33,000	7,000	**62,525**
63DR012	6.10	-	-	18,300	-	21,000	6,900	-	-	-	-	10,500	14,000	**70,700**
63DR009	21.71	-	-	65,130	-	31,500	18,000	15,600	-	180	3,188	67,200	34,615	**235,413**
63DR004	6.26	-	-	18,780	-	26,250	-	4,800	-	-	-	75,600	10,500	**135,930**
63DR006	11.04	-	-	33,120	-	-	12,150	8,800	-	-	1,275	31,200	24,500	**111,045**
63DR001	2.64	-	-	7,920	-	-	-	-	-	30	-	48,825	3,500	**60,275**
63DR003	3.00	-	-	9,000	-	-	-	-	-	30	2,295	1,620	-	**12,945**
63DR007	10.00	-	-	30,000	-	-	-	7,200	-	30	-	4,050	7,000	**48,280**
63DR005	12.20	-	-	36,600	-	-	-	-	-	-	-	-	-	**36,600**
63DR008	22.81	-	-	68,430	-	-	50,400	10,000	630	-	3,825	60,300	49,000	**242,585**
63DR002	70.60	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Total	**186.98**	**-**	**-**	**349,140**	**-**	**136,500**	**91,950**	**74,400**	**855**	**270**	**14,408**	**423,030**	**180,775**	**1,271,328**

4.3 New Construction

For new construction, the following standard costs have been applied to estimate the costs involved.

Table 4.3.1 Standard unit costs for new construction

Activity	Unit	Unit cost (NPR)
Track opening	km	4,000,000
Gravelling	km	3,000,000
Bridge construction	m	1,050,000

The resulting estimated costs for new construction come to NPR 1,117 million.

Table 4.3.2 Cost estimate for new construction (NPR '000)

Code	Name of Road	New length (km)	Opening up (NPR)	Gravelling (NPR)	Bridges (NPR)	Total cost (NPR)
63DR010	Jumla-Urthu-Dillichaur	-	-	-	-	-
63DR011	Dillichaur-Chhumchaur	-	-	-	-	-
63DR012	Dillichaur-Talfi-Pere-Syalagad	-	-	-	-	-
63DR009	Chandannath-Garjyangkot-Guthichaur-Chotra	-	-	-	-	-
63DR004	Acharyalihi-Dhitallihi-Sanigaun	-	-	-	-	-
63DR006	Dansangu-Khalla-Haku-Ghodesing	20.50	82,000	61,500	-	**143,500**
63DR001	Bagbazar-Patharkhola	-	-	-	-	-
63DR003	Acharyalihi-Narakot	-	-	-	-	-
63DR007	Gachchusangu-Dhimichaur-Lekpor-Kotghar	16.00	64,000	48,000	-	**112,000**
63DR005	Kudari-Tamti-Topla	9.10	36,400	27,300	-	**63,700**
63DR008	Jumla-Urthu-Bumramadi-Bulbule	11.00	44,000	33,000	-	**77,000**
63DR002	Raraseri-Malikathata-Gamtha-Sudi	14.00	56,000	42,000	26,250	**124,250**
Total		**70.60**	**282,400**	**211,800**	**26,250**	**520,450**

4.4 DTPP Costs

The total costs for the District Transport Perspective Plan come to NPR 1939.9 million as indicated in the table below.

Table 4.4.1 DTPP costs (NPR '000)

Code	Conservation	Improvement	New construction	Total
63DR010	33,242	255,030	-	288,272
63DR011	9,545	62,525	-	72,070
63DR012	12,658	70,700	-	83,358
63DR009	-	235,413	-	235,413
63DR004	12,990	135,930	-	148,920
63DR006	-	111,045	143,500	254,545
63DR001	5,478	60,275	-	65,753
63DR003	6,225	12,945	-	19,170
63DR007	20,750	48,280	112,000	181,030
63DR005	-	36,600	63,700	100,300
63DR008	47,331	242,585	77,000	366,916
63DR002		-	124,250	124250
Total	**148,217**	**1,271,328**	**520,450**	**1,939,995**

5. Ranking

The ranking of the required interventions determines the order in which they will be carried out. This ranking is done separately for conservation, improvement and new construction. Ranking is done according to the cost per person served, whereby the costs are the estimated costs of the previous chapter. For the calculation of the population served, use is made of the population data for the VDCs linked by the road concerned.

5.1 Conservation

Ranking of roads for conservation is based on the total conservation costs per person served by the road. This ranking of roads will be updated each year in the ARMP based on the actual cost estimates for the year concerned. An example ranking is provided in the table below based on standard costs for the first year.

Table 5.1.1 Ranking of conservation works (NPR '000)

Code	Total length (km)	1. Emergency	2. Routine	3. Recurrent (paved)	4. Recurrent (gravel)	5. Recurrent (earth)	6. Periodic (blacktop)	7. Periodic (gravel)	Total cost (NPR '000)	Population served	Cost/person (NPR)
63DR006	11.04	-	-	-	-	-	-	-	DoR budget	6,836	-
63DR009	21.71	-	-	-	-	-	-	-	DoR budget	9,770	-
63DR005	12.20	-	-	-	-	-	-	-	DRILP budget	4,478	-
63DR003	3.00	120	75	-	-	1,050	-	-	1,245	3,518	354
63DR001	2.64	106	66	-	-	924	-	-	1,096	2,998	365
63DR004	6.26	250	157	-	-	2,191	-	-	2,598	4,729	549
63DR007	10.00	400	250	-	-	3,500	-	-	4,150	6,529	636
63DR012	6.10	244	153	-	-	2,135	-	-	2,532	3,791	668
63DR011	4.60	184	115	-	-	1,610	-	-	1,909	2,615	730
63DR010	16.02	641	401	-	-	5,607	-	-	6,648	4,711	1,411
63DR008	22.81	912	570	-	-	7,984	-	-	9,466	6,322	1,497

The allocation of maintenance funding will follow a specific sequence indicated below, and will be applied to the road ranking as defined in the ARMP. This will be of particular importance where funding is insufficient to cover all conservation costs.

1. Emergency maintenance
2. Routine maintenance
3. Recurrent maintenance paved roads
4. Recurrent maintenance gravel roads
5. Recurrent maintenance gravel roads
6. Periodic maintenance blacktop roads
7. Periodic maintenance gravel roads

5.2 Improvement

In the case of improvement activities, ranking is again based on the basis of the total cost per person served. The resulting order of the roads is shown in the table below. In the case of roads requiring blacktopping, the improvement of the road has been split into two phases. The first phase includes all improvements to bring the road to a maintainable all-weather standard (gravelling, widening, cross drainage and protective structures), while the second phase only includes the blacktopping. This has been done to avoid unnecessarily delaying the improvement of such roads to all-weather gravel standard due to the additional cost of blacktopping (increasing the cost per person served).

Table 5.2.1 Ranking of improvement works (NPR '000)

Code	Total length (km)	Gravelling (km)	Blacktopping (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
63DR005	12.20	12.20	-	DRILP budget	2,565	-
63DR006	11.04	11.04	-	DoR budget	4,412	-
63DR009	21.71	21.71	-	DoR budget	9,770	-
63DR003	3.00	3.00	-	12,945	3,518	3,680
63DR012	6.10	6.10	-	70,700	3,791	18,649
63DR007	10.00	10.00	-	48,280	2,511	19,227
63DR001	2.64	2.64	-	60,275	2,998	20,105
63DR011	4.60	4.60	-	62,525	2,615	23,910
63DR004	6.26	6.26	-	135,930	4,729	28,744
63DR010	16.02	16.02	-	255,030	4,711	54,135
63DR008	22.81	22.81	-	242,585	3,454	70,233

5.3 New construction

For the roads proposed for new construction, ranking is also according to the cost per person served by the new road. The resulting ranking is indicated in the table below.

Table 5.3.1 Ranking of new construction works (NPR '000)

Code	Length (km)	Total cost (NPR '000)	Population served	Cost/person (NPR)
63DR001	-	-	2,998	-
63DR003	-	-	3,518	-
63DR009	-	DoR budget	9,770	-
63DR010	-	-	4,711	-
63DR012	-	-	3,791	-
63DR004	-	-	4,729	-
63DR011	-	-	2,615	-
63DR005	9.10	DRILP budget	1,913	-
63DR006	20.50	DoR budget	2,424	-
63DR008	11.00	77,000	2,868	26,848
63DR007	16.00	112,000	4,018	27,875
63DR002	14.00	124,250	3,494	35,561

6. District Transport Master Plan (DTMP)

The District Transport Master Plan (DTMP) that covers the next five years is prepared based on the projected financial resources available and the prioritized transport interventions as listed in the DTPP. Year-wise targets are prepared for the different roads and intervention types.

6.1 Five Year Projected Financial Resources

The projected financial resources for the next five years are estimated by considering all possible funding sources. The funding levels are based on the existing trend of funding. An annual increase in funding of 10% is assumed for all funding sources. The total district budget for the road sector is NPR 728 million for the five-year period.

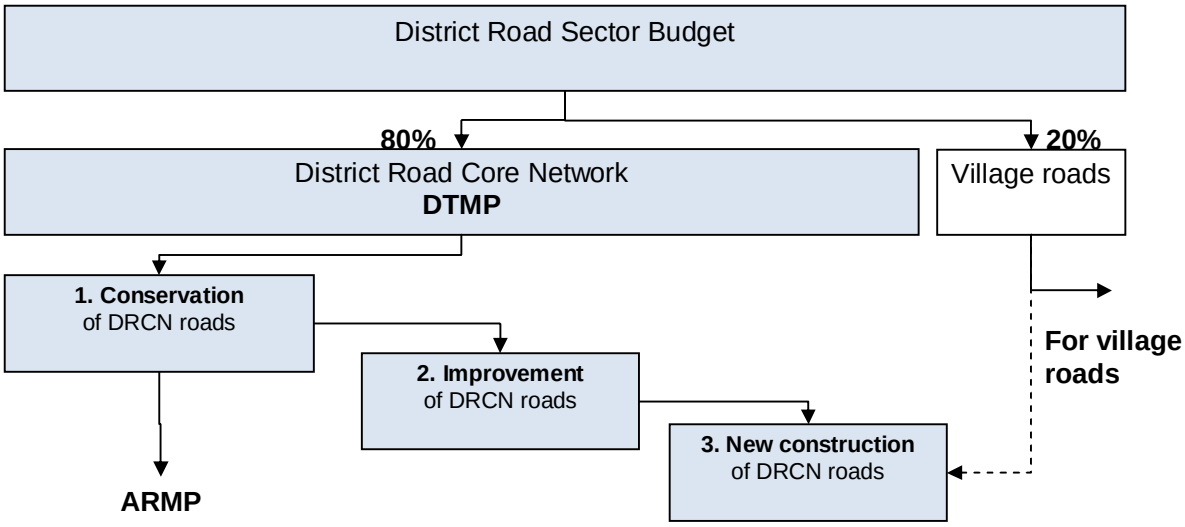
Table 6.1.1 Estimated funding levels (roads) for next five years (in NPR '000)

Funding source	2070/71	2071/72	2072/73	2073/74	2074/75
SWAp	6,000	6,600	7,260	7,986	8,785
Agricultural Road	1,800	1,980	2,178	2,396	2,635
DRILP	25,700	28,270	31,097	34,207	37,627
RCIW	35,000	38,500	42,350	46,585	51,244
Roads and Bridges individual	5,000	5,500	6,050	6,655	7,321
Roads Board Nepal	1,938	2,131	2,344	2,579	2,837
VDC (40% of total)	24,000	26,400	29,040	31,944	35,138
People' contribution (20%)	19,888	21,876	24,064	26,470	29,117
Total	**119,325**	**131,258**	**144,383**	**158,822**	**174,704**
Grand total	**728,491**				

6.2 Budget Allocation

The distribution of the available district road sector budget is indicated in the figure below. Due to the low number of village roads, 80% of the total budget is reserved for the district road core network. The remaining 20% is to be used by the DDC for the village roads, giving priority to emergency maintenance and routine/recurrent maintenance. Alternatively, this 20% may be used for the new construction of DRCN roads where this is considered a priority by the district. The 80% of the district road sector budget for the DTMP is allocated firstly to conservation, secondly improvement, and any remaining funding is allocated to new construction.

Figure 5 District road sector budget allocation



Based on this distribution of the estimated budget, the available annual budget for each intervention type and the resulting district road core network length by surface type can be calculated. The results are shown in the following table.

Table 6.2.1 Investment plan

Section																			
A	**Item**				**Year**														
	Fiscal year				2070/71			2071/72			2072/73			2073/74			2074/75		
	Total budget				119,325			131,258			144,383			158,822			174,704		
	Village roads				23,865			26,252			28,877			31,764			34,941		
	Core road network budget (DTMP)				**95,460**			**105,006**			**115,507**			**127,057**			**139,763**		
B	**Core network length (km)**				**71.43**			**71.43**			**71.43**			**71.43**			**71.43**		
	Blacktop (km)				-			-			-			-			-		
	Gravel (km)				-			7.56			19.34			23.31			28.40		
	Earthen (km)				71.43			63.87			52.09			48.12			43.03		
C	**Conservation (NRs)**				**29,643**			**33,424**			**39,313**			**41,300**			**43,841**		
	Emergency				2,857			2,857			2,857			2,857			2,857		
	Routine				1,786			1,786			1,786			1,786			1,786		
	Recurrent (blacktop)				-			-			-			-			-		
	Recurrent (gravel)				-			3,781			9,670			11,657			14,198		
	Recurrent (earthen)				25,001			22,354			18,232			16,841			15,062		
	Periodic (blacktop)				-			-			-			-			-		
	Periodic (gravel)				-			2,647			6,769			8,160			9,938		
D	**Improvement**	**Cost**	**BT**	**GR**	**65,817**	**BT**	**GR**	**71,582**	**BT**	**GR**	**76,193**	**BT**	**GR**	**85,757**	**BT**	**GR**	**95,922**	**BT**	**GR**
	63DR005	-	-	12.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	63DR006	-	-	11.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	63DR009	-	-	21.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	63DR003	12,945	-	3.00	12,945	-	3.00	-	-	-	-	-	-	-	-	-	-	-	-
	63DR012	70,700	-	6.10	52,872	-	4.56	17,828	-	1.54	-	-	-	-	-	-	-	-	-
	63DR007	48,280	-	10.00	-	-	-	48,280	-	10.00	-	-	-	-	-	-	-	-	-
	63DR001	60,275	-	2.64	-	-	-	5,473	-	0.24	54,802	-	2.40	-	-	-	-	-	-
	63DR011	62,525	-	4.60	-	-	-	-	-	-	21,392	-	1.57	41,133	-	3.03	-	-	-
	63DR004	135,930	-	6.26	-	-	-	-	-	-	-	-	-	44,623	-	2.06	91,307	-	4.20
	63DR010	255,030	-	16.02	-	-	-	-	-	-	-	-	-	-	-	-	4,615	-	0.29
	63DR008	242,585	-	22.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	63DR002	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
	Total improvement				**65,817**	**-**	**7.56**	**71,582**	**-**	**11.78**	**76,193**	**-**	**3.97**	**85,757**	**-**	**5.08**	**95,922**	**-**	**4.49**
E	**Construction**	**Cost**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**		**-**	**GR**	
	63DR001	-	-		-	-		-	-		-	-		-	-		-	-	

	63DR003	-	-	-	-	-	-	-	-	-	-	-	-
	63DR009	-	-	-	-	-	-	-	-	-	-	-	-
	63DR010	-	-	-	-	-	-	-	-	-	-	-	-
	63DR012	-	-	-	-	-	-	-	-	-	-	-	-
	63DR004	-	-	-	-	-	-	-	-	-	-	-	-
	63DR011	-	-	-	-	-	-	-	-	-	-	-	-
	63DR005	-	9.10	-	-	-	-	-	-	-	-	-	-
	63DR006	-	20.50	-	-	-	-	-	-	-	-	-	-
	63DR008	77,000	11.00		-		-		-		-	-	-
	63DR007	112,000	16.00		-		-		-		-		-
	63DR002	124,250	14.00		-		-		-		-		-
	Total new construction			-	-	-	-	-	-	-	-	-	-
F	**Remaining budget**			-		-		-		-		-	

Note: Road **63DR006 is planned to conserve, improve and construct by DoR, Surkhet, within next 5 years**
Road **63DR005 is planned to conserve, improve and construct by DRILP, within next 5 years**
Road **63DR009 is planned to conserve, improve and construct by DoR, Surkhet, within next 5 years**

6.3 DTMP Outputs

Based on the investment plan presented above, all DRCN roads will be conserved for the duration of the DTMP period. A further 73.81km including 44.95km by DoR & DRILP will be improved to gravel standard inclusive of cross drainage and protective structures required to make them maintainable all-weather roads. The remaining 38.54 km of earthen roads at the end of the DTMP period will be improved in the next DTMP. The same goes for the new construction which will only take place after the existing DRCN roads have been improved to maintainable all weather standards (some of these roads may be constructed through VDC funding).

Table 6.3.1 DTMP output

Conservation	Improvement gravel	Improvement blacktop	New construction	Remarks
116.38	73.81	-	-	44.95km by DoR & DRILP

Of the total DTMP budget, NPR 187.5 million will be spent on conservation and NPR 395 million on improvement. This will use up the entire DTMP budget for the five-year period.

6.4 DTMP Outcome

As a result of the activities planned in this DTMP, the percentage of all-weather maintainable DRCN roads increases by 25% from 0km to 28.86km, with only 75% (87.52km) remaining fair weather.

Table 6.4.1 Standard of DRCN roads

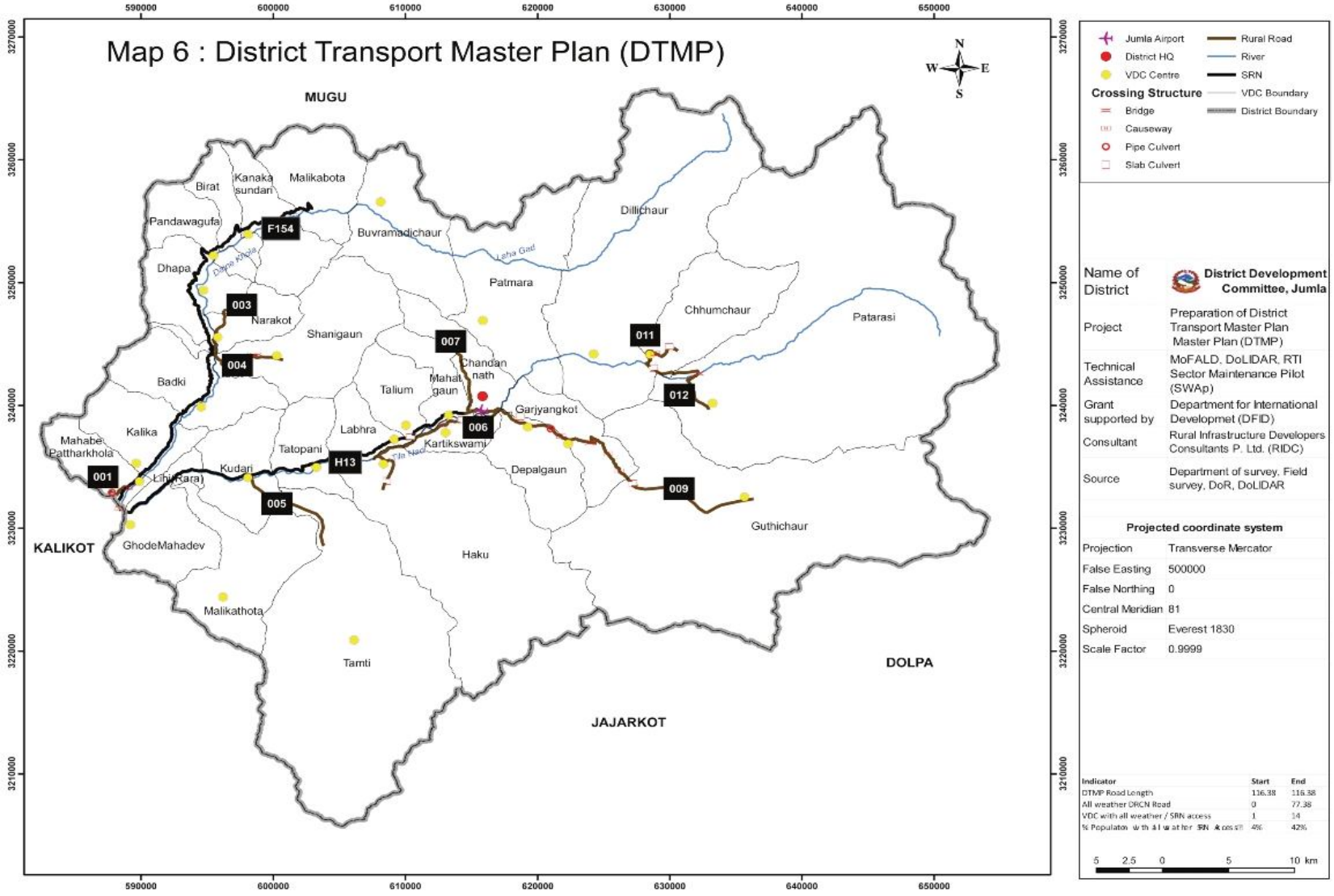
	Total length	Fair-weather		All-weather gravel		All-weather blacktop	
	km	km	%	km	%	km	%
Start of DTMP	116.38	116.38	100%	-	0%	-	0%
End of DTMP	116.38	87.52	75%	28.86	25%	-	0%
Difference	-	- 28.86	-25%	28.86	25%	-	0%

The number of VDC headquarters with access to the SRN or all-weather DRCN roads will increase from 1 to 14 and the district population with access to the SRN or all-weather DRCN roads will increase from 4% to 25%. The number of VDC headquarters with no access to DRCN roads will remain at 4, while the percentage of the district population with no access to DRCN roads will remain at 6%.

Table 6.4.2 Population with access to road network

	Direct access to SRN			No access to road			Fair-weather core roads			All-weather core roads		
	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%	VDCs	Population	%
Start of DTMP	11	47,607	44%	5	14,381	13%	13	40,681	38%	1	4,729	4%
End of DTMP	11	47,607	44%	3	6,362	6%	2	8,165	8%	14	45,264	42%
Difference	-	-	0%	-2	-8,019	-7%	-11	-32,516	-30%	13	40,535	38%

Figure 6 District Transport Master Plan (DTMP)



Annexes

Annex 1: DDC Letter

नेपाल सरकार
संघिय मामिला तथा स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय
जिल्ला प्राविधिक कार्यालय,
जुम्ला ।

मिति : २०६९/११/२४

प.सं. :०६९/०७०
च.नं. : ६९८

विषय :- कार्य सम्पन्न भएको सम्बन्धमा ।

श्री टिम लिडर
आर.टि. आई स्वाप ललितपुर

उपर्युक्त सम्बन्धमा आर.आई. डि.सी. प्रा.ली. बाट यस जिल्लाको जिल्ला यातायात गुरुयोजना बनाउनेको क्रममा अभिमुखीकरण गोष्ठि, फिल्ड वर्क तथा सडक इन्भेन्ट्री कार्य, जिल्ला सडक सञ्जाल छनौट गोष्ठि र ड्राफ्ट प्रतिवेदन प्रस्तुति गोष्ठि सम्पन्न भएको व्यहोरा जानकारी गराईन्छ ।

(अर्जुन कुमार थापा)
स्थानिय विकास अधिकारी
स्थानीय विकास अधिकारी

Annex 2: Traffic Data

Code	Total Length (km)	Motorcycle	Car-Jeep-Minibus	Tractor	Truck-Bus	PCU	VPD
63DR010	16.02	8		5		**14**	**5**
63DR011	4.60	2		1		**3**	**1**
63DR012	6.10	3		2		**6**	**2**
63DR009	21.71	5		4		**11**	**4**
63DR004	6.26	4		4		**10**	**4**
63DR006	11.04	3		2		**6**	**2**
63DR001	2.64	2		2		**5**	**2**
63DR003	3.00	3		2		**6**	**2**
63DR007	10.00	6	1	6		**16**	**7**
63DR005	12.20					**-**	**-**
63DR008	22.81	10		5		**15**	**5**
Total	**116.38**						

Annex 3: Population Served

#	VDC/municipality	Population	Road											
			63DR010	63DR011	63DR012	63DR009	63DR004	63DR006	63DR001	63DR003	63DR007	63DR005	63DR008	63DR002
1	Birat	3,541									X			
2	Pandabgupha	3,819												
3	Dhapa	3,746												
4	Badki	4,740												
5	Kalikakhetu	2,815												
6	Mahabaipatharkhola	2,998							X					
7	Raralihi	2,681												
8	Ghodemahadev	2,424						X						
9	Malikathata	3,494												X
10	Kanakasundari	2,988									X			
11	Malikabota	1,691											X	
12	Narakot	3,518								X				
13	Kudari	5,011												
14	Bumramadichaur	1,177											X	
15	Sanigaun	4,729					X							
16	Tatopani	5,079												
17	Tamti	4,478										X		
18	Patmara	3,454											X	
19	Chandannath	8,491												
20	Mahatgaun	3,625												
21	Kartikswami	2,186						X						
22	Haku	2,226						X						
23	Dillichaur	4,711	X											
24	Chhumchaur	2,615		X										
25	Garjyangkot	4,146				X								
26	Depalgaun	2,398				X								
27	Patarasi	3,791			X									
28	Guthichaur	3,226				X								
29	Talium	4,745												
30	Lamra	2,855												
	Total population	**107,398**	**4,711**	**2,615**	**3,791**	**9,770**	**4,729**	**6,836**	**2,998**	**3,518**	**6,529**	**4,478**	**6,322**	**3,494**
	Total VDCs/municipalities	**30**	**1**	**1**	**1**	**3**	**1**	**3**	**1**	**1**	**2**	**1**	**3**	**1**

Annex 4: Photographs

Presentation by Project Director (Orientation workshop)

Participants of Orientation workshop

Field Inventory work


Discussion during finalization of DRCN


Data collection


Existing tracks